

# Post Deployment Health Surveillance Report

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*January 1, 2010 to December 31, 2019*

Released June 2021

Epidemiology Program

Health Outcomes Military Exposures  
(formerly Post Deployment Health Services)  
Office of Patient Care Services  
Veterans Health Administration Department  
of Veterans Affairs  
<http://www.publichealth.va.gov/epidemiology>



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## Summary

### Objective

This report examined the health status of Veterans Health Administration (VHA) users between January 1, 2010 and December 31, 2019 among all VHA users, including deployed Vietnam War Veterans, 1990-1991 Gulf War Veterans, and Operations Enduring Freedom, Iraqi Freedom, and New Dawn Veterans.

### Data Analysis

- Statistical analyses were completed in this report for each study group:
  - Prevalence proportions to describe the demographic and military characteristics among Veterans who utilized VHA health care in 2019;
  - Prevalence rate per 100,000 Veterans for the years 2010 – 2019; and
  - Age-adjusted incidence rates per 100,000 Veterans per year for the years 2015 – 2019, which were calculated using the US 2000 Standard Population.
- Cases were identified using the International Classification of Disease, Ninth and Tenth Revisions, Clinical Modification (ICD-9-CM/ICD-10-CM) codes related to the specified diseases and conditions.
- Prevalent and incident cases for a given condition must have had at least two relevant VHA visits within 365 days during the study period.

### Key Findings

Below are some of the key findings.

Among all VHA Users:

- The condition with the highest prevalence rate was hypertension with over 39,000 per 100,000 Veterans, followed by diabetes and major depressive disorder with prevalence rates of about 19,000 per 100,000 Veterans.
- Major depressive disorder, hypertension, anxiety disorder, sleep apnea, and PTSD consistently had the highest annual incidence rates between 2015 and 2019, among all VHA users.

Among Vietnam Veterans:

- Hypertension point prevalence rates were 60,149 cases per 100,000 Vietnam Veterans, coronary artery disease was observed in 22,879 cases per 100,000 Vietnam Veterans and ischemic heart disease 3,191 cases per 100,000.
- PTSD was identified in 24,813 per 100,000 Vietnam Veterans and depression diagnoses was observed in 22,907 per 100,000 Vietnam Veterans.

Among Gulf War Veterans:

- The hypertension point prevalence rate was 40,342 per 100,000 deployed Gulf War Veterans, coronary artery disease was observed in 6,045 cases per 100,000 Veterans and ischemic heart disease 1,022 cases per 100,000.
- PTSD was identified in 26,833 per 100,000 deployed Gulf War Veterans and depression diagnoses was observed in 28,699 per 100,000 deployed Gulf War Veterans.

Among Operation Enduring Freedom, Operation Iraqi Freedom, and Operation New Dawn Veterans:

- PTSD was the most prevalent condition among deployed OEF/OIF/OND Veterans (29,254) per 100,000 Veterans.
- PTSD was followed by major depressive disorder (26,210) and anxiety disorder (19,321) per 100,000 Veterans.

**Suggested citation**

Epidemiology Program, Health Outcomes Military Exposures, Office of Patient Care Services, Department of Veterans Affairs. (2021). Post Deployment Health Surveillance Tables of Prevalence and Incidence: 2010-2019. Washington, DC: Author. (URL)

## Post Deployment Health Surveillance Report

### Objective

- This report examined the health status of Veterans Health Administration (VHA) users between January 1, 2010 and December 31, 2019.
- Thirty-one health conditions were selected for this report, including cancers, mental health disorders, and diseases of the nervous, circulatory, and respiratory systems, among others.
- Prevalence and age adjusted incidence rates were examined in this report.
- Findings are only applicable to the population of VHA users; estimates of disease prevalence and incidence may differ among those who are not users of VHA health care services. Therefore, estimates regarding disease prevalence and incidence may not be generalizable to the total Veteran population or the total U.S. population. The estimates provided do provide insight on the health profile of VHA users.

### Key Definitions

- **Prevalence:** Prevalence is the proportion of the population that had the selected health condition during the observation period. It is estimated by taking the number of Veterans who had the selected health condition divided by the total number in the population. This proportion was expressed as a rate per 100,000 Veterans in this report.
- **Incidence:** Incidence is the proportion of the population that had *newly* acquired the condition within the time frame of interest. It is estimated by taking the number of Veterans who are *newly* diagnosed with the health condition divided by the number of Veterans who were at risk of acquiring the condition. Thus, Veterans who were prevalent cases at the beginning of the period of interest are excluded from the calculation. This proportion was expressed as a rate per 100,000 Veterans in this report.
- **Age adjusted rates:** Age adjustments were made to the incidence rates to allow for direct comparison of the different Veteran study groups. This adjustment ensures that any observed study group differences in the disease incidence rates were not affected by the differences in the age distribution.

### Study Groups

To assess the selected 31 health conditions, four Veteran study groups were defined:

- **All VHA Users:** All Veterans who used VHA health care services between January 1, 2010 – December 31, 2019
- **Deployed Vietnam War Veterans:** Veterans who served in the 1964-1975 Vietnam War and used VHA health care services between January 1, 2010 – December 31, 2019.
- **Deployed Gulf War Veterans:** Veterans who served in the 1990-1991 Gulf War (Operations Desert Storm and Desert Shield) and used VHA health care services between January 1, 2010 – December 31, 2019.
- **Deployed OEF/OIF/OND Veterans:** Veterans who served in Operations Enduring Freedom, Iraqi Freedom, and/or New Dawn and used VHA health care services between January 1, 2010 – December 31, 2019.

## Data Sources

This report relied on data from the VHA Corporate Data Warehouse, the Persian Gulf Veterans Roster, the United States Veterans Eligibility Trends and Statistics Vietnam Era file, the Southeast Asia Deployed Veteran Roster file, and the Northeast Program Evaluation Center files. A short description of the data sources is provided below:

- **Corporate Data Warehouse (CDW):** The CDW contains VHA health care data including inpatient and outpatient encounter data, as well as inpatient and outpatient purchased care data. CDW data from January 1<sup>st</sup>, 2010 through December 31<sup>st</sup>, 2019 were extracted on August 14<sup>th</sup>, 2020.
- **Persian Gulf War Veterans Roster:** The Persian Gulf War Veterans Roster is derived from the United States (U.S.) Department of Defense and is maintained by the Post Deployment Health Services Epidemiology Program, VHA Office of Patient Care Services. It includes all Veterans who deployed in support of the 1990-1991 Gulf War. The roster contains demographic information and deployment status. There was a total of 621,901 deployed Gulf War Veterans in this original file
- **United States Veterans Eligibility Trends and Statistics (USVETS):** The VA Office of Enterprise Integration, Data Governance and Analytics business line develops the USVETS dataset. The USVETS dataset contains information about individual Veterans including demographic information and details of military service. The demographic information and military service characteristics for Gulf War Veterans and Vietnam War Veterans were utilized from this data source.
  - **USVETS Vietnam Era file:** The USVETS Vietnam Era file is a subset of the USVETS data and contains demographic and military service information for deployed and non-deployed Vietnam War Era Veterans. The SSN and demographic information for Vietnam War Veterans were utilized from this data source. There were 8,806,229 Vietnam War-era Veterans in this original file.
- **Southeast Asia Deployed Veteran Roster:** The Southeast Asia Deployed Veteran Roster, prepared by the Post Deployment Health Services Epidemiology Program, VHA Office of Patient Care Services, contains deployed Southeast Asia War Veterans. The Roster is derived from the U.S. Department of Defense and contains Veteran SSNs, demographic information, and deployment status. The SSN and the deployment status of Vietnam War Veterans were utilized from this data source. There were 3,055,651 Vietnam War Veterans in this original file.
- **Northeast Program Evaluation Center (NEPEC):** The NEPEC file is sourced from the Veterans and Defense Identification Repository and represents Veterans deployed to OEF/OIF/OND, between 2001 and 2019. There was a total of 2,935,150 OEF/OIF/OND Veterans in the original file.

## Data Analysis

Calculations included VHA users who accessed VHA health care between January 1, 2010 and December 31, 2019. Data analyses were completed among all VHA users and by conflict: Veterans who were deployed during the Vietnam War, 1990-1991 Gulf War, and Operations Enduring Freedom, Iraqi Freedom, and New Dawn (OEF/OIF/OND).



Demographic and military characteristics were summarized as prevalence proportions by study group among Veterans who utilized VHA health care in 2019. Cases, prevalent and incident, were identified using the International Classification of Disease, Ninth and Tenth Revision, Clinical Modification (ICD-9-CM/ICD-10-CM) codes related to the specified diseases and conditions (Appendix A). Both ICD-9-CM and ICD-10-CM codes were used in this report due to the nationwide mandated switch to ICD-10-CM codes in October 2015. VHA's CDW inpatient, outpatient, and purchased care VHA health care services data that contain the ICD-9-CM and ICD-10-CM codes were extracted on August 14, 2020. All diagnostic positions were considered in disease identification.

Prevalent and incident cases for a given condition must have had at least two relevant VHA visits within 365 days during the study period. Prevalent cases included all Veterans who were treated for a specified disease or condition during the surveillance period 2010-2019. Incident cases included Veterans who contracted the illness annually between 2015 and 2019. Veterans who had contracted a disease/condition or were deceased in the prior year were therefore excluded from the denominator.

Age adjustments were made to the incidence rates to allow for comparison of the different Veteran study groups. This adjustment ensures that any observed study group differences in the disease incidence rates were not affected by the differences in the age distribution between different study groups. The age grouping used for the adjustments were '18-29', '30-39', '40-49', '50-59', '60-69', '70-79', '80+'. Age adjusted incidence rates were calculated using the US 2000 Standard Population. (For more detail regarding the age-adjustment procedure, refer to: Klein RJ, Schoenborn CA. Age Adjustment Using the 2000 Projected U.S. Population. Statistical Notes. 2001; 20: 1-10.).

**Table A: Demographic and military characteristics among all users of VHA health care between January 1, 2019 and December 31, 2019**

		All VHA Users <sup>a</sup>	
		n	%
<b>All</b>		6,836,159	100.0
<b>Gender</b>			
	Male	5,886,675	86.1
	Female	589,243	8.6
	Unknown	27	<0.1
	Missing	360,214	5.3
<b>Age<sup>b</sup></b>			
	18-29	259,947	3.8
	30-39	679,647	9.9
	40-49	656,905	9.6
	50-59	959,808	14.0
	60-69	1,469,177	21.5
	70-79	1,619,499	23.7
	80+	830,766	12.2
	Missing	360,410	5.3
<b>Race</b>			
	White	5,034,395	73.6
	Black/African American	1,165,817	17.1
	American Indian/Alaskan Native	57,174	0.8
	Asian	68,901	1.0
	Native Hawaiian/Pacific Islander	12,053	0.2
	Asian or Pacific Islander Unspecified	27,000	0.4
	Other	98,035	1.4
	Multiple race	6,212	0.1
	Unknown	6,358	0.1
	Missing	360,214	5.3
<b>Ethnicity</b>			
	Non-Hispanic	5,951,154	87.1
	Hispanic	504,471	7.4
	Unknown	20,320	0.3
	Missing	360,214	5.3
<b>Branch of Service</b>			
	Army	2,940,531	43.0
	Coast Guard	52,298	0.8
	Air Force	872,794	12.8
	Marine Corps	587,084	8.6
	Navy	1,078,022	15.8
	Other <sup>c</sup>	3,470	0.1
	Unknown	941,746	13.8
	Missing	360,214	5.3

<sup>†</sup> VHA's Corporate Data Warehouse (CDW) inpatient, outpatient, and purchased care VHA health care services data was extracted on August 14, 2020.

<sup>\*</sup> Demographics and military characteristic variables were extracted from the United States Veterans Eligibility Trends and Statistics (USVETS) data.

<sup>a</sup> **All VHA Users:** All Veterans who used VHA health care services between January 1, 2019 – December 31, 2019.

<sup>b</sup> Age was calculated as of January 1, 2019.

<sup>c</sup> 'Other' includes Public Health Service, and National Oceanic and Atmospheric Administration Commissioned Officer (NOACC).

Figures - Demographic and military characteristics among all users of VHA health care in 2019 (N = 6,836,159)

Figure 1: Gender

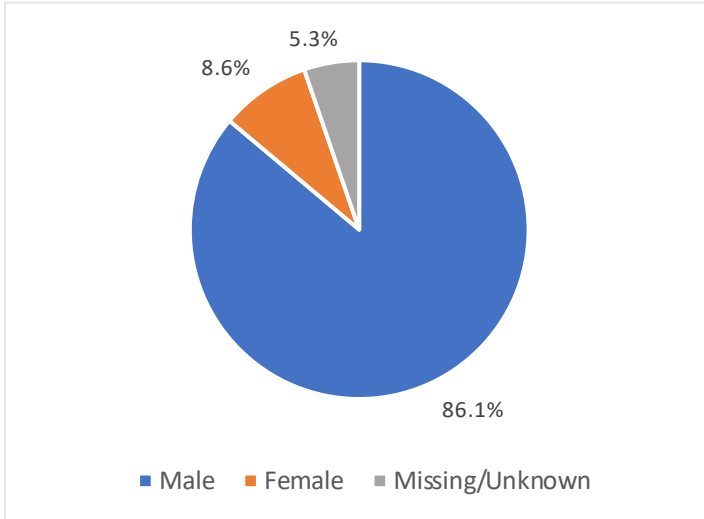


Figure 2: Age Groups

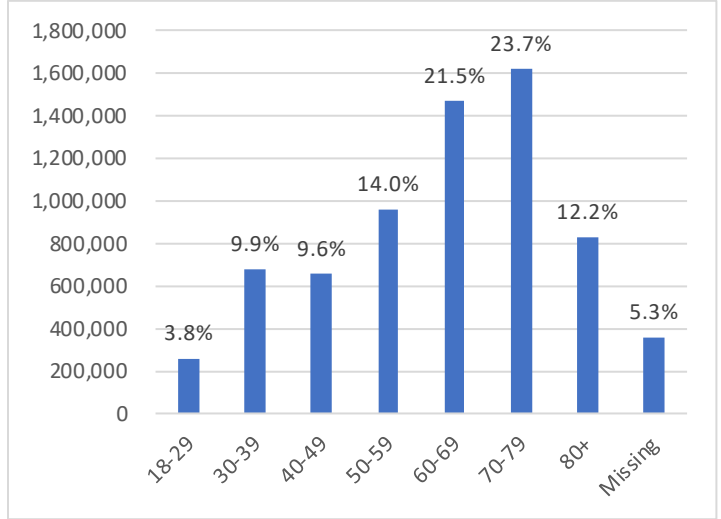


Figure 3: Race

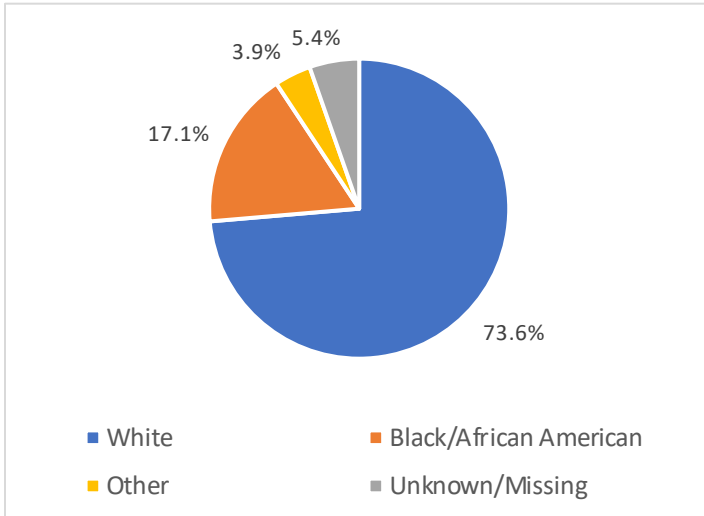


Figure 4: Ethnicity

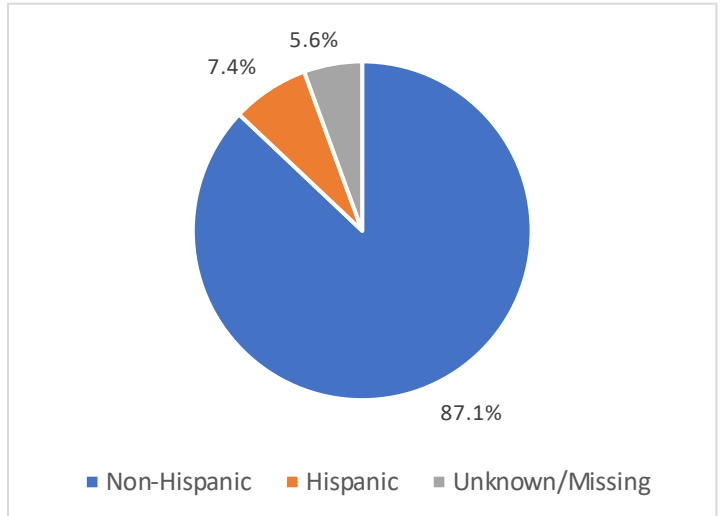
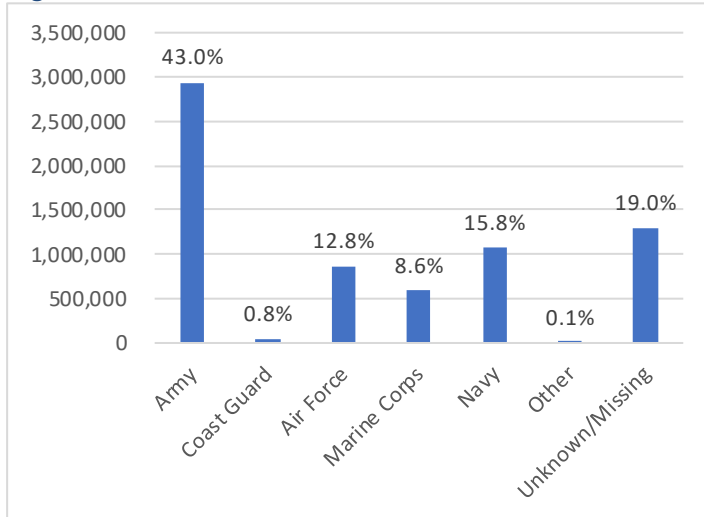


Figure 5: Branch of Service



- **All VA Users:** All Veterans who used VHA health care services between January 1, 2019 – December 31, 2019.
- Age was calculated as of January 1, 2019.
- Other race category includes Asian, Native Hawaiian/Pacific Islander, and Asian or Pacific Islander unspecified.
- Other branch of service category includes Public Health Service, and National Oceanic and Atmospheric Administration Commissioned Officer (NOACC).
- VA's Corporate Data Warehouse (CDW) inpatient, outpatient, and purchased care VHA health care services data was extracted on August 14, 2020.
- Demographics and military characteristic variables were extracted from the United States Veterans Eligibility Trends and Statistics (USVETS) data.

**Table B: Prevalence and incidence rates among all users of VHA health care for selected diseases between January 1, 2010 and December 31, 2019**

All VHA Users <sup>a</sup> N=12,024,732	Prevalence Rate per 100,000 Veterans	Age Adjusted Incidence Rate per 100,000 Veterans				
	2010-2019	2015	2016	2017	2018	2019
<b>Infectious and Parasitic Diseases</b>						
HIV	314	27	28	24	24	20
Hepatitis	2,504	185	174	158	130	103
<b>Malignant Neoplasms</b>						
Brain Cancer	105	10	10	10	10	9
Lung and Bronchus Cancer	1,256	76	66	65	68	61
Bladder Cancer	732	40	30	29	34	30
Prostate Cancer	4,535	188	136	143	162	154
Kidney and Renal Pelvis Cancer	431	29	27	27	29	27
Non-Hodgkin Lymphoma	609	39	23	24	25	23
<b>Endocrine/Metabolic Disorders</b>						
Diabetes	19,367	1,261	1,205	1,184	1,180	1,197
<b>Mental Disorders</b>						
PTSD	12,520	2,565	2,429	2,290	2,371	2,357
Major Depressive Disorder	18,964	3,462	3,128	3,117	3,337	3,368
Anxiety Disorder	11,730	2,457	2,263	2,332	2,575	2,751
Substance Abuse Disorder	14,553	2,188	1,252	1,269	1,300	1,275
<b>Diseases of Nervous System</b>						
Parkinson's Disease	1,074	54	53	55	57	53
ALS	112	9	7	8	7	6
Migraine	2,837	666	674	696	790	797
Multiple Sclerosis	231	22	20	18	19	17
<b>Diseases of Circulatory System</b>						
Hypertension	39,734	3,458	3,308	3,192	3,270	3,211
Coronary Artery Disease	13,841	697	616	629	628	593
Ischemic Heart Disease	1,468	85	328	241	204	168
<b>Diseases of Respiratory System</b>						
COPD	10,516	729	617	587	584	546
Asthma	3,192	412	354	359	393	387
Other Chronic Bronchitis	16	3	<1	<1	<1	<1
<b>Diseases of Digestive System</b>						
Irritable Bowel Syndrome	950	168	185	199	225	231
Gastritis	1,012	131	119	114	125	117
Cirrhosis	1,194	98	98	98	104	100
<b>Musculoskeletal Diseases</b>						
Arthritis	14,710	1,375	1,091	1,049	1,130	1,094
Fibromyalgia	1,173	199	100	94	104	98
<b>Symptoms, Signs, and Ill-defined Conditions</b>						
Chronic Fatigue Syndrome	199	19	48	47	50	52
Sleep Apnea	10,118	1,424	2,352	2,253	2,430	2,369
<b>Injury/Poisonings</b>						
Traumatic Brain Injury	2,320	564	556	511	529	478

Abbreviations: HIV = Human Immunodeficiency Virus, PTSD = Posttraumatic Stress Disorder, ALS = Amyotrophic Lateral Sclerosis, COPD = Chronic Obstructive Pulmonary Disease.

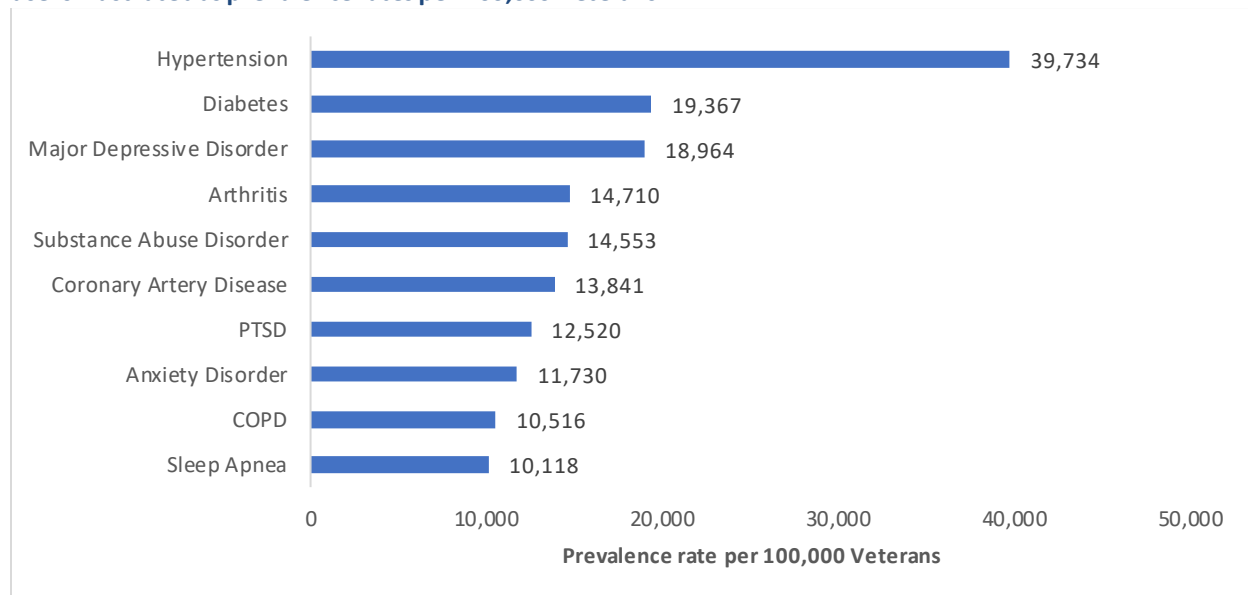
<sup>†</sup> VA's Corporate Data Warehouse (CDW) inpatient, outpatient, and purchased care VHA health care services data was extracted on August 14, 2020.

\*Date of birth data for age-adjusted rates were extracted from the United States Veterans Eligibility Trends and Statistics (USVETS) data.

<sup>a</sup>All VA Users: All Veterans who used VHA health care services between January 1, 2010 – December 31, 2019.

Some of the observed changes in age-adjusted incidence rates from 2015 to 2016 may be attributed to the conversion from International Classification of Disease, Ninth Revision, Clinical Modification (ICD-9-CM) to the Tenth Revision, Clinical Modification ICD-10-CM.

**Figure 6: The ten most prevalent conditions between January 1, 2010 and December 31, 2019 among all VHA users illustrated as prevalence rates per 100,000 Veterans**



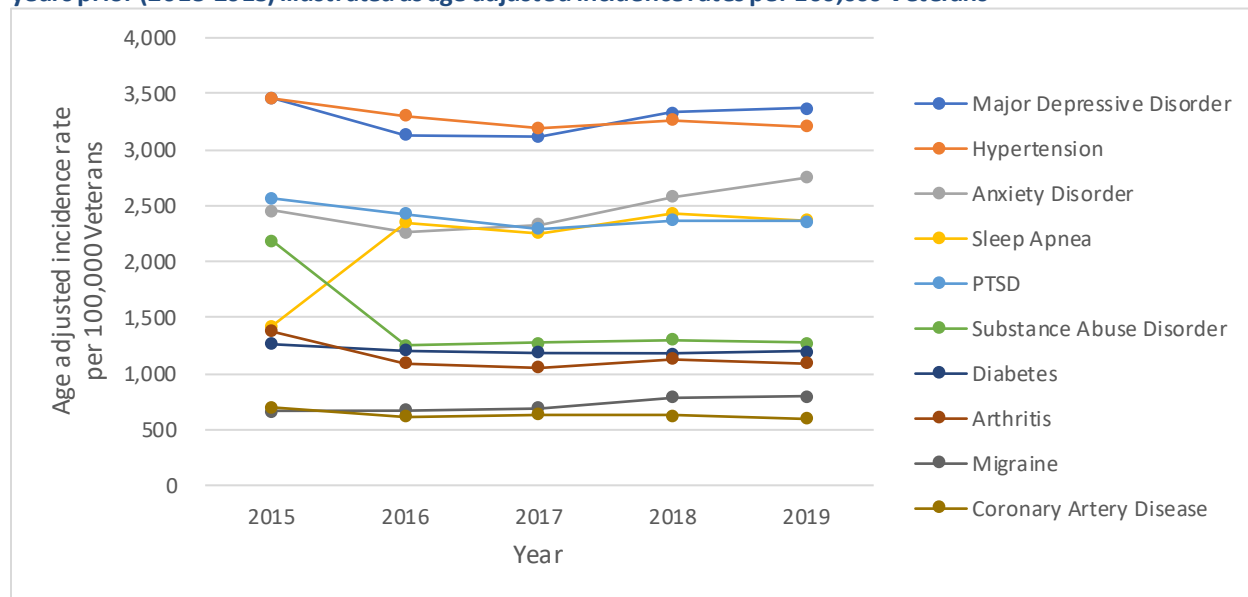
Assessment of the top ten conditions is limited to the 31 conditions included in this report.

Abbreviations: PTSD = Posttraumatic Stress Disorder, COPD = Chronic Obstructive Pulmonary Disease.

VHA's Corporate Data Warehouse (CDW) inpatient, outpatient, and purchased care VHA health care services data was extracted on August 14, 2020.

**All VHA Users:** All Veterans who used VHA health care services between January 1, 2010 – December 31, 2019.

**Figure 7: The ten conditions with the highest incidence rates in 2019 among all VHA users compared to the four years prior (2015-2018) illustrated as age adjusted incidence rates per 100,000 Veterans**



Assessment of the top ten conditions is limited to the 31 conditions included in this report.

Abbreviations: PTSD = Posttraumatic Stress Disorder.

VHA's Corporate Data Warehouse (CDW) inpatient, outpatient, and purchased care VHA health care services data was extracted on August 14, 2020.

Date of birth data for age-adjusted rates were extracted from the United States Veterans Eligibility Trends and Statistics (USVETS) data.

**All VHA Users:** All Veterans who used VHA health care services between January 1, 2010 – December 31, 2019.

Legend is sorted in descending order by age-adjusted incidence rates for the year 2019.

Some of the observed changes in age-adjusted incidence rates from 2015 to 2016 may be attributed to the conversion from International Classification of Disease, Ninth Revision, Clinical Modification (ICD-9-CM) to the Tenth Revision, Clinical Modification ICD-10-CM.

### Main findings among all VHA users

- The majority of all VHA users were male (86.1%), white (73.6%), and non-Hispanic (87.1%).
- 7.4% of all VHA health care users were Hispanic.
- Among all VHA users, 43% served in the Army. However, branch of service data was missing for 14% of the population.
- The condition with the highest prevalence rate was hypertension with over 39,000 per 100,000 Veterans, followed by diabetes and major depressive disorder with prevalence rates of about 19,000 per 100,000 Veterans.
- Coronary artery disease affects over 13,000 per 100,000 Veterans among all VHA users.
- Over 19,000 per 100,000 Veterans have been diagnosed with major depressive disorder Veterans.
- Sleep apnea is common, affecting about 11,000 per 100,000 Veterans using VHA services.
- Migraines affect 3,000 per 100,000 Veterans, and Parkinson's disease, about 1,000 per 100,000 Veterans.
- Prostate cancer is the most common cancer measured, affecting about 4,500 per 100,000 Veterans among all VHA users.
- The annual age-adjusted incidence rates have limited variations from year to year between 2015 and 2019 across all conditions examined.
- Major depressive disorder, hypertension, anxiety disorder, sleep apnea, and PTSD consistently had the highest annual incidence rates between 2015 and 2019, among all VHA users.

**Table C: Demographic and military characteristics among deployed Vietnam War Veterans using VHA health care between January 1, 2019 and December 31, 2019**

	All VHA Users <sup>a</sup>		Deployed Vietnam War Veterans <sup>b</sup>	
	n	%	n	%
<b>All</b>	6,836,159	100.0	1,020,978	100.0
<b>Gender</b>				
Male	5,886,675	86.1	1,016,888	99.6
Female	589,243	8.6	4,090	0.4
Unknown	27	<0.1	-	-
Missing	360,214	5.3	-	-
<b>Age<sup>c</sup></b>				
18-29	259,947	3.8	-	-
30-39	679,647	9.9	-	-
40-49	656,905	9.6	-	-
50-59	959,808	14.0	-	-
60-69	1,469,177	21.5	342,076	33.5
70-79	1,619,499	23.7	618,313	60.6
80+	830,766	12.2	60,574	5.9
Missing	360,410	5.3	14	<0.1
<b>Race</b>				
White	5,034,395	73.6	868,484	85.1
Black/African American	1,165,817	17.1	125,137	12.3
American Indian/Alaskan Native	57,174	0.8	9,475	0.9
Asian	68,901	1.0	4,854	0.5
Native Hawaiian/Pacific Islander	12,053	0.2	702	0.1
Asian or Pacific Islander Unspecified	27,000	0.4	185	<0.1
Other	98,035	1.4	11,882	1.2
Multiple race	6,212	0.1	13	<0.1
Unknown	6,358	0.1	246	<0.1
Missing	360,214	5.3	-	-
<b>Ethnicity</b>				
Non-Hispanic	5,951,154	87.1	970,778	95.1
Hispanic	504,471	7.4	48,186	4.7
Unknown	20,320	0.3	2,014	0.2
Missing	360,214	5.3	-	-
<b>Branch of Service</b>				
Army	2,940,531	43.0	611,973	59.9
Coast Guard	52,298	0.8	2,269	0.2
Air Force	872,794	12.8	140,066	13.7
Marine Corps	587,084	8.6	85,139	8.3
Navy	1,078,022	15.8	111,207	10.9
Other <sup>d</sup>	3,470	0.1	173	<0.1
Unknown	941,746	13.8	70,151	6.9
Missing	360,214	5.3	-	-

<sup>†</sup> VHA's Corporate Data Warehouse (CDW) inpatient, outpatient, and purchased care VHA health care services data was extracted on August 14, 2020.

<sup>\*</sup> Demographics and military characteristic variables were extracted from the United States Veterans Eligibility Trends and Statistics (USVETS) data.

<sup>a</sup> **All VHA Users:** All Veterans who used VHA health care services between January 1, 2019 – December 31, 2019.

<sup>b</sup> **Deployed Vietnam War Veterans:** Veterans who served in the 1964-1975 Vietnam War and used VHA health care services between January 1, 2019 – December 31, 2019.

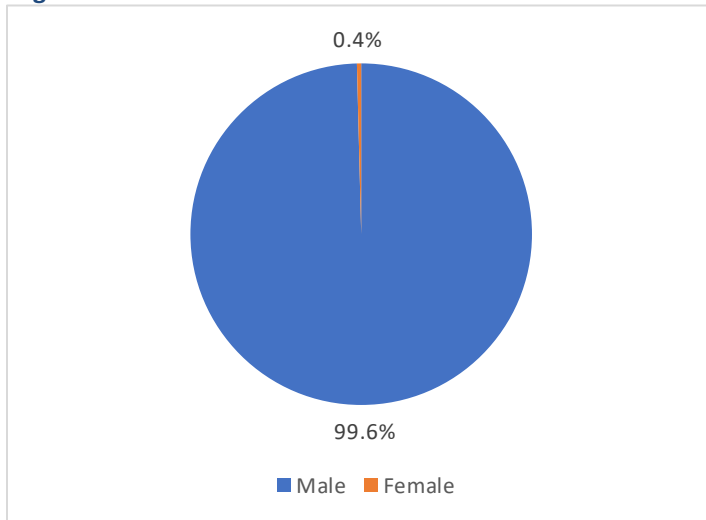
<sup>c</sup> Age was calculated as of January 1, 2019.

<sup>d</sup> Other includes Public Health Service, and National Oceanic and Atmospheric Administration Commissioned Officer (NOACC).

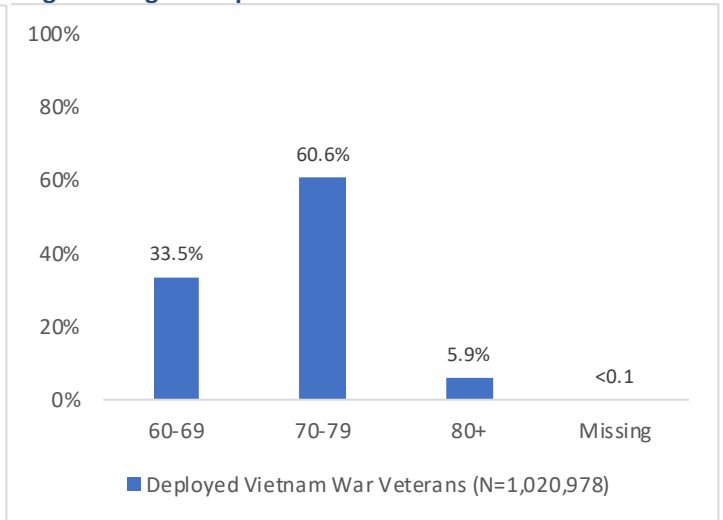
- Cell suppressed due to low counts (≤5).

**Figures - Demographic and military characteristics among Vietnam War Veterans using VHA health care in 2019 (N=1,020,978)**

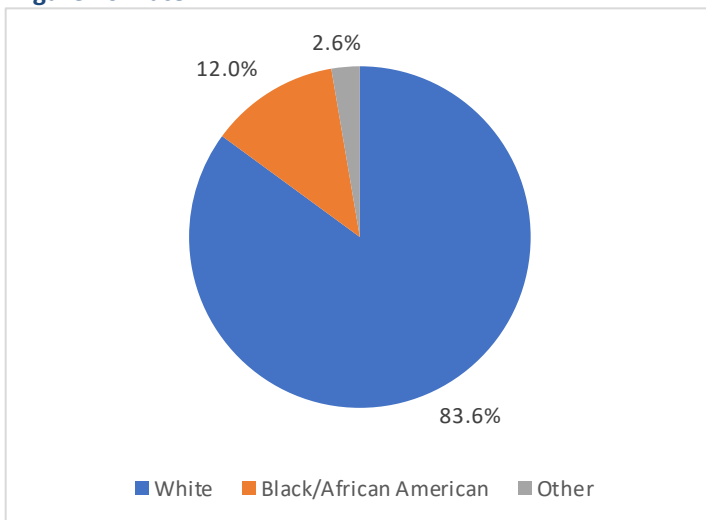
**Figure 8: Gender**



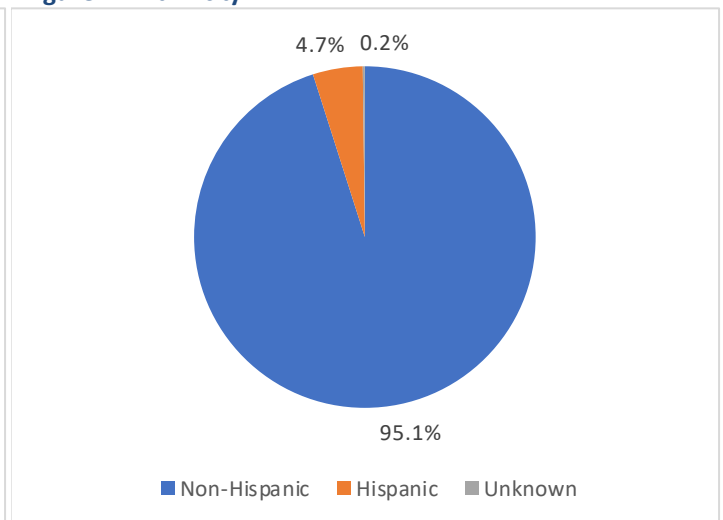
**Figure 9: Age Groups**



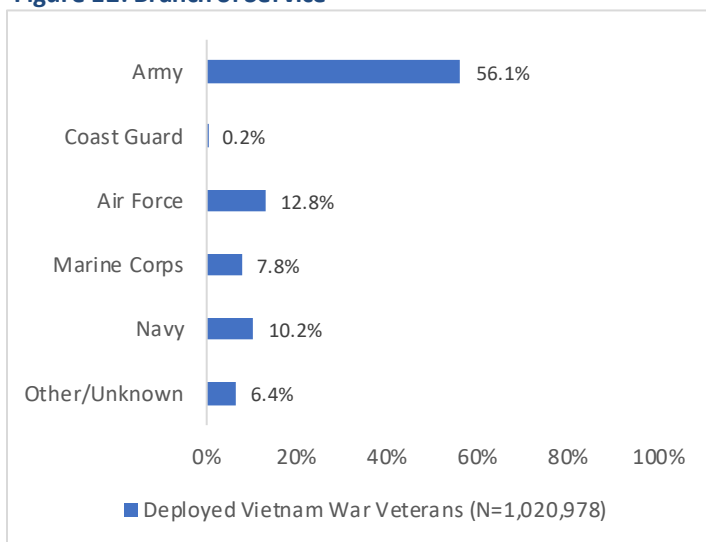
**Figure 10: Race**



**Figure 11: Ethnicity**



**Figure 12: Branch of Service**



- **Deployed Vietnam War Veterans:** Veterans who served in the 1964-1975 Vietnam War and used VHA health care services between January 1, 2019 – December 31, 2019.
- Age was calculated as of January 1, 2019.
- ‘Other’ race category includes Asian, Native Hawaiian/Pacific Islander, and Asian or Pacific Islander unspecified.
- ‘Other’ branch of service category includes Public Health Service, and National Oceanic and Atmospheric Administration Commissioned Officer (NOACC).
- VHA’s Corporate Data Warehouse (CDW) inpatient, outpatient, and purchased care VHA health care services data was extracted on August 14, 2020.
- Demographics and military characteristic variables were extracted from the United States Veterans Eligibility Trends and Statistics (USVETS) data.



**Table D: Prevalence and incidence rates among deployed Vietnam War Veterans using VHA health care for selected diseases between January 1, 2010 and December 31, 2019**

Deployed Vietnam War Veterans <sup>a</sup> VHA Users N=1,499,538	Prevalence Rate per 100,000 Veterans	Age Adjusted Incidence Rate per 100,000 Veterans				
	2010-2019	2015	2016	2017	2018	2019
<b>Infectious and Parasitic Diseases</b>						
HIV	244	1	1	1	1	1
Hepatitis	3,899	202	125	177	28	24
<b>Malignant Neoplasms</b>						
Brain Cancer	190	12	5	5	5	4
Lung and Bronchus Cancer	2,455	94	71	53	61	57
Bladder Cancer	1,176	47	43	23	27	26
Prostate Cancer	7,014	217	153	153	128	121
Kidney and Renal Pelvis Cancer	819	25	15	17	19	16
Non-Hodgkin Lymphoma	1,068	23	14	15	15	16
<b>Endocrine/Metabolic Disorders</b>						
Diabetes	33,002	966	902	1,253	491	500
<b>Mental Disorders</b>						
PTSD	24,813	541	394	465	279	269
Major Depressive Disorder	22,907	960	719	628	328	339
Anxiety Disorder	11,269	545	402	397	200	216
Substance Abuse Disorder	19,181	939	552	511	150	154
<b>Diseases of Nervous System</b>						
Parkinson's Disease	1,765	67	63	55	59	56
ALS	168	12	14	4	4	4
Migraine	1,247	63	61	62	21	23
Multiple Sclerosis	248	10	3	2	2	2
<b>Diseases of Circulatory System</b>						
Hypertension	60,149	2,637	2,404	2,082	1,375	1,404
Coronary Artery Disease	22,879	749	582	799	425	432
Ischemic Heart Disease	3,191	75	402	228	156	134
<b>Diseases of Respiratory System</b>						
COPD	17,822	799	649	819	377	381
Asthma	3,295	97	54	91	49	53
Other Chronic Bronchitis	28	1	<1	<1	<1	<1
<b>Diseases of Digestive System</b>						
Irritable Bowel Syndrome	704	36	45	15	15	17
Gastritis	1,431	72	61	31	34	32
Cirrhosis	2,252	119	125	131	52	53
<b>Musculoskeletal Diseases</b>						
Arthritis	22,207	949	734	737	399	396
Fibromyalgia	999	39	4	3	4	3
<b>Symptoms, Signs, and Ill-defined Conditions</b>						
Chronic Fatigue Syndrome	199	6	9	7	8	9
Sleep Apnea	14,184	576	984	939	462	444
<b>Injury/Poisonings</b>						
Traumatic Brain Injury	1,478	74	112	84	48	43

Abbreviations: HIV = Human Immunodeficiency Virus, PTSD = Posttraumatic Stress Disorder, ALS = Amyotrophic Lateral Sclerosis, COPD = Chronic Obstructive Pulmonary Disease.

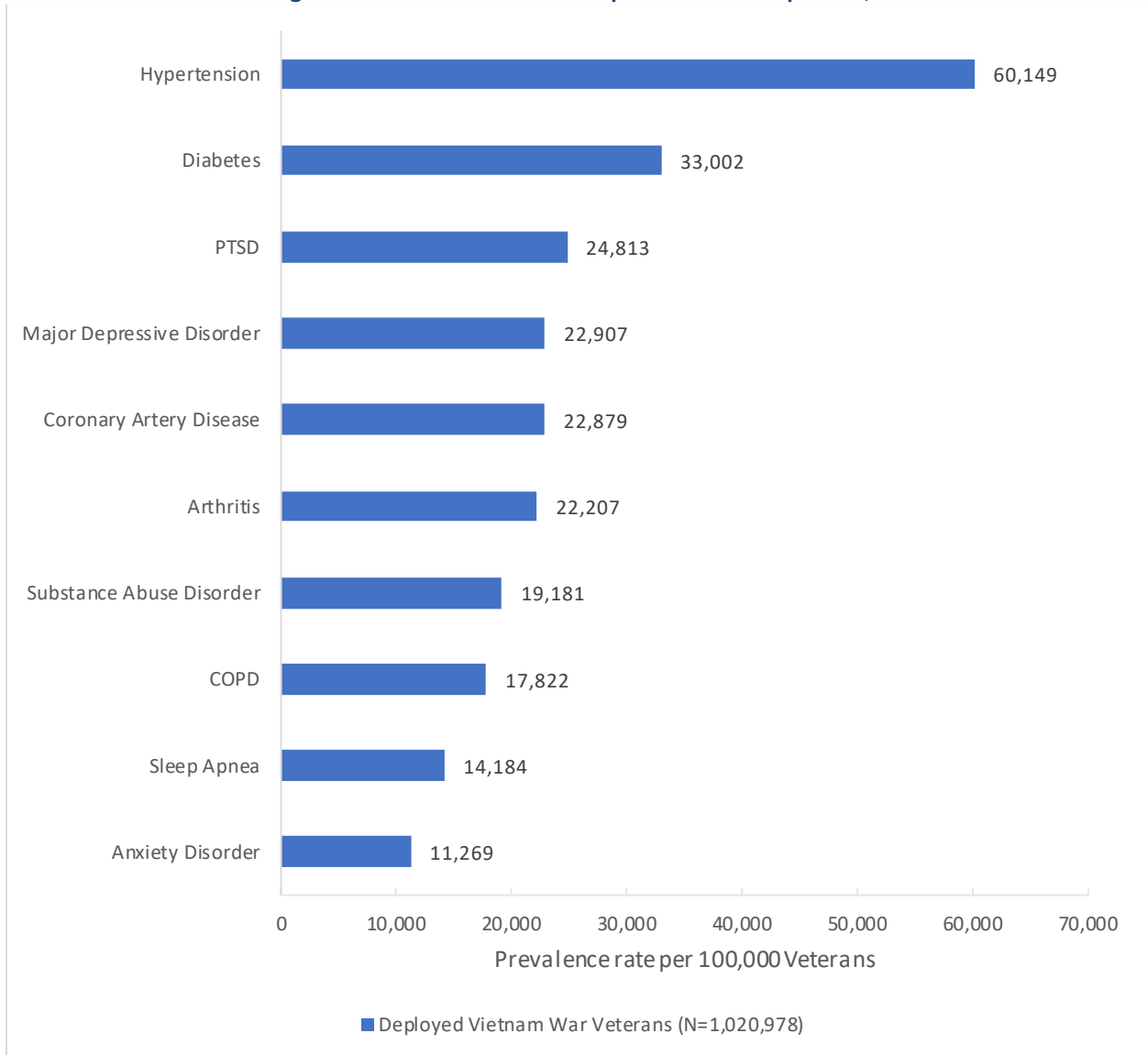
<sup>†</sup>VHA's Corporate Data Warehouse (CDW) inpatient, outpatient, and purchased care VHA health care services data was extracted on August 14, 2020.

\*Date of birth data for age-adjusted rates were extracted from the United States Veterans Eligibility Trends and Statistics (USVETS) data.

<sup>‡</sup>Deployed Vietnam War Veterans: Veterans who served during the 1964-1975 Vietnam War and used VHA health care services between January 1, 2010 – December 31, 2019.

Some of the observed changes in age-adjusted incidence rates from 2015 to 2016 may be attributed to the conversion from International Classification of Disease, Ninth Revision, Clinical Modification (ICD-9-CM) to the Tenth Revision, Clinical Modification ICD-10-CM.

**Figure 13: The ten most prevalent conditions between January 1, 2010 and December 31, 2019 among deployed Vietnam War Veterans using VHA health care illustrated as prevalence rates per 100,00 Veterans**



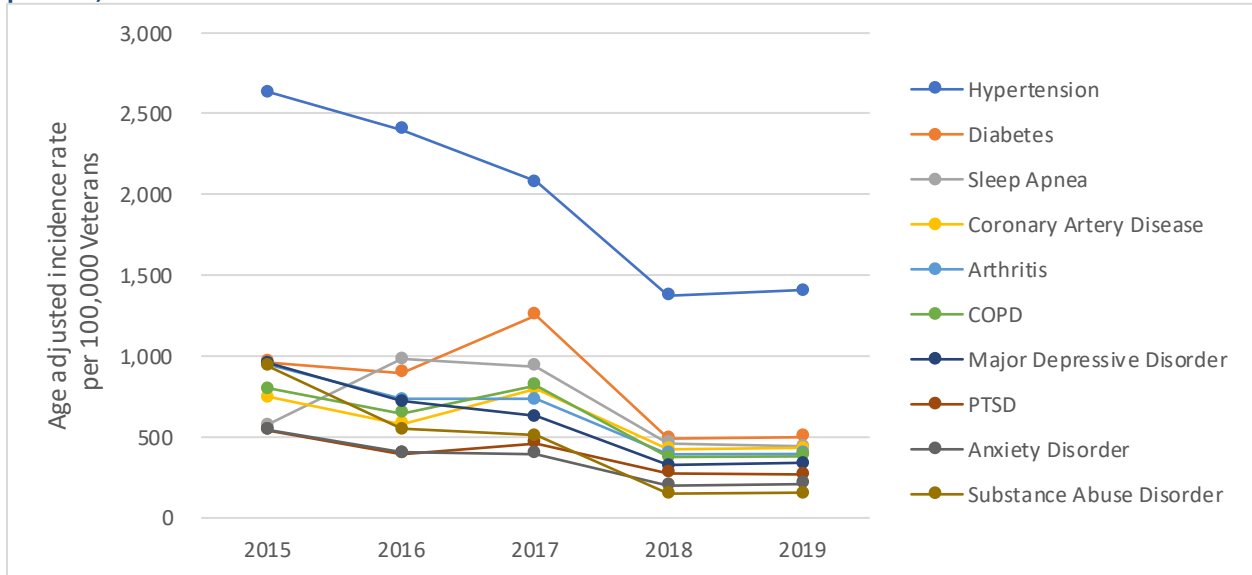
Assessment of the top ten conditions is limited to the 31 conditions included in this report.

Abbreviations: PTSD = Posttraumatic Stress Disorder, COPD = Chronic Obstructive Pulmonary Disease.

VHA's Corporate Data Warehouse (CDW) inpatient, outpatient, and purchased care VHA health care services data was extracted on August 14, 2020.

**Deployed Vietnam War Veterans:** Veterans who served during 1964-1975 Vietnam War and used VHA health care services between January 1, 2010 – December 31, 2019.

**Figure 14: The ten conditions with the highest incidence rates in 2019 among deployed Vietnam War Veterans using VHA health care compared to the four years prior (2015-2018) illustrated as age adjusted incidence rates per 100,000 Veterans**



Assessment of the top ten conditions is limited to the 31 conditions included in this report.

Abbreviations: PTSD = Posttraumatic Stress Disorder.

VHA's Corporate Data Warehouse (CDW) inpatient, outpatient, and purchased care VHA health care services data was extracted on August 14, 2020.

Date of birth data for age-adjusted rates were extracted from the United States Veterans Eligibility Trends and Statistics (USVETS) data.

**Deployed Vietnam War Veterans:** Veterans who served during the 1964-1975 Vietnam War and used VHA health care services between January 1, 2010 – December 31, 2019.

Legend is sorted in descending age-adjusted incidence rates order for the year 2019.

Some of the observed changes in age-adjusted incidence rates from 2015 to 2016 may be attributed to the conversion from International Classification of Disease, Ninth Revision, Clinical Modification (ICD-9-CM) to the Tenth Revision, Clinical Modification ICD-10-CM.

**Main Findings – among Vietnam War Veterans who use VHA health care services:**

- Vietnam Veterans using VHA services were 99.6% male.
- About 60% of the Vietnam Veterans were between 70 and 79 years old.
- 85% of VHA using Vietnam Veterans were white and 4.7% were identified as Hispanic.
- Almost 60% of the VHA using Vietnam Veterans served in the Army.

**Cancers:**

- Brain cancer point prevalence rates were 190 per 100,000 Vietnam Veterans, prostate cancer was 7,014 cases per 100,000 Vietnam Veterans and lung and bronchus cancers 2,455 per 100,000 Vietnam Veterans.

**Heart Diseases:**

- Hypertension point prevalence rates were 60,149 cases per 100,000 Vietnam Veterans, coronary artery disease was observed in 22,879 cases per 100,000 Vietnam Veterans and ischemic heart disease 3,191 cases per 100,000.

**Mental Disorders**

- PTSD was identified in 24,813 per 100,000 Vietnam Veterans and depression diagnoses were observed in 22,907 per 100,000 Vietnam Veterans.

**Neurological Outcomes**

- Parkinson's disease prevalence rate was 1,765 cases per 100,000 Vietnam Veterans and migraine prevalence rate was 1,247 per 100,000.

**Musculoskeletal disease**

- Arthritis prevalence was 22,207 per 100,000 Vietnam Veterans.

**Table E: Demographic and military characteristics among deployed Gulf War Veterans using VHA health care between January 1, 2019 and December 31, 2019**

	All VHA Users <sup>a</sup>		Deployed Gulf War Veterans <sup>b</sup>	
	n	%	n	%
<b>All</b>	6,836,159	100.00	268,242	100.00
<b>Gender</b>				
Male	5,886,675	86.11	244,971	91.32
Female	589,243	8.62	23,200	8.65
Unknown	27	<0.01	-	-
Missing	360,214	5.27	71	0.03
<b>Age<sup>c</sup></b>				
18-29	259,947	3.80	-	-
30-39	679,647	9.94	-	-
40-49	656,905	9.61	64,169	23.92
50-59	959,808	14.04	138,527	51.64
60-69	1,469,177	21.49	53,686	20.01
70-79	1,619,499	23.69	11,142	4.15
80+	830,766	12.15	645	0.24
Missing	360,410	5.27	73	0.03
<b>Race</b>				
White	5,034,395	73.64	170,881	63.70
Black/African American	1,165,817	17.05	82,372	30.71
American Indian/Alaskan Native	57,174	0.84	2,108	0.79
Asian	68,901	1.01	4,209	1.57
Native Hawaiian/Pacific Islander	12,053	0.18	804	0.30
Asian or Pacific Islander Unspecified	27,000	0.39	2,042	0.76
Other	98,035	1.43	5,600	2.09
Multiple race	6,212	0.09	145	0.05
Unknown	6,358	0.09	10	<0.01
Missing	360,214	5.27	71	0.03
<b>Ethnicity</b>				
Non-Hispanic	5,951,154	87.05	248,053	92.47
Hispanic	504,471	7.38	20,043	7.47
Unknown	20,320	0.30	75	0.03
Missing	360,214	5.27	71	0.03
<b>Branch of Service</b>				
Army	2,940,531	43.01	152,892	57.00
Coast Guard	52,298	0.77	233	0.09
Air Force	872,794	12.77	23,851	8.89
Marine Corps	587,084	8.59	31,909	11.90
Navy	1,078,022	15.77	45,168	16.84
Other <sup>d</sup>	3,470	0.05	141	0.05
Unknown	941,746	13.78	13,977	5.21
Missing	360,214	5.27	71	0.03

<sup>†</sup>VHA's Corporate Data Warehouse (CDW) inpatient, outpatient, and purchased care VHA health care services data was extracted on August 14, 2020.

<sup>\*</sup>Demographics and military characteristic variables were extracted from the United States Veterans Eligibility Trends and Statistics (USVETS) data.

<sup>a</sup>All VHA Users: All Veterans who used VHA health care services between January 1, 2019 – December 31, 2019.

<sup>b</sup>Deployed Gulf War Veterans: Veterans who served in the 1990-1991 Gulf War (Operations Desert Storm and Desert Shield) and used VHA health care services between January 1, 2019 – December 31, 2019.

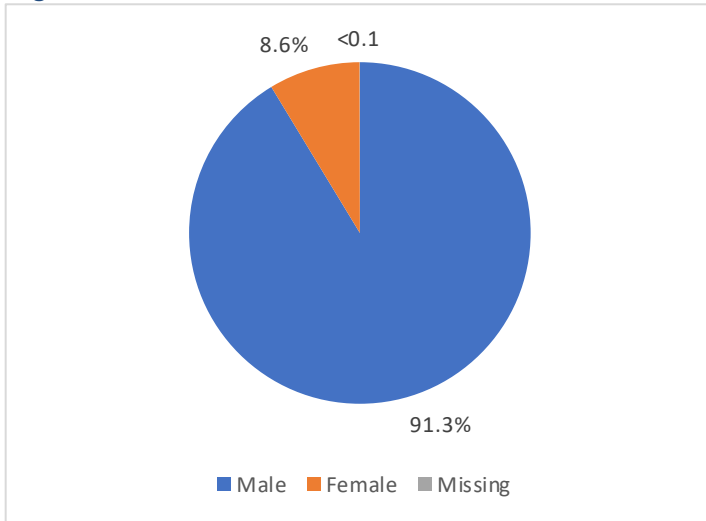
<sup>c</sup>Age was calculated as of January 1, 2019.

<sup>d</sup>Other includes Public Health Service, and National Oceanic and Atmospheric Administration Commissioned Officer (NOACC).

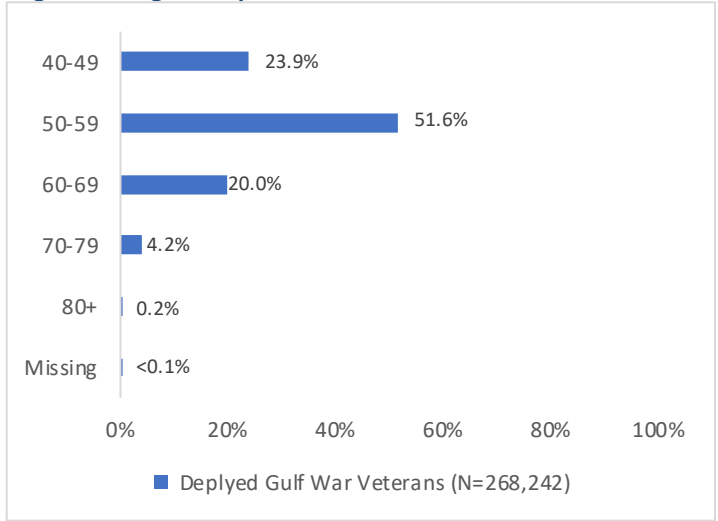
- Cell suppressed due to low counts (≤5).

**Figures - Demographic and military characteristics among Gulf War Veterans using VHA health care in 2019 (N=268,242)**

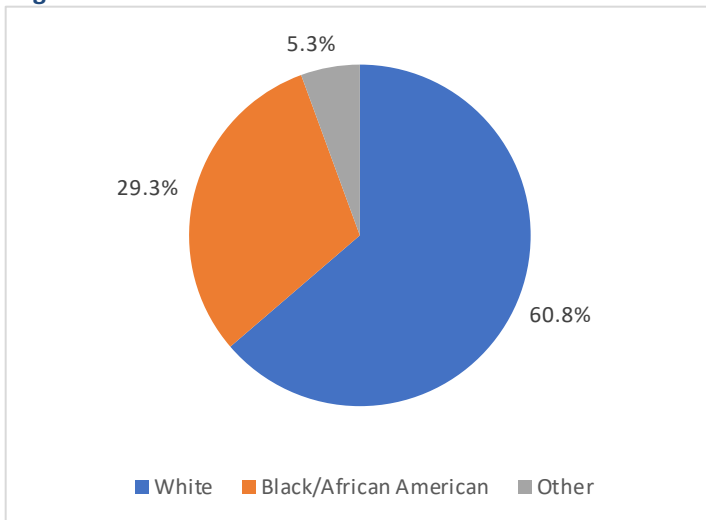
**Figure 15: Gender**



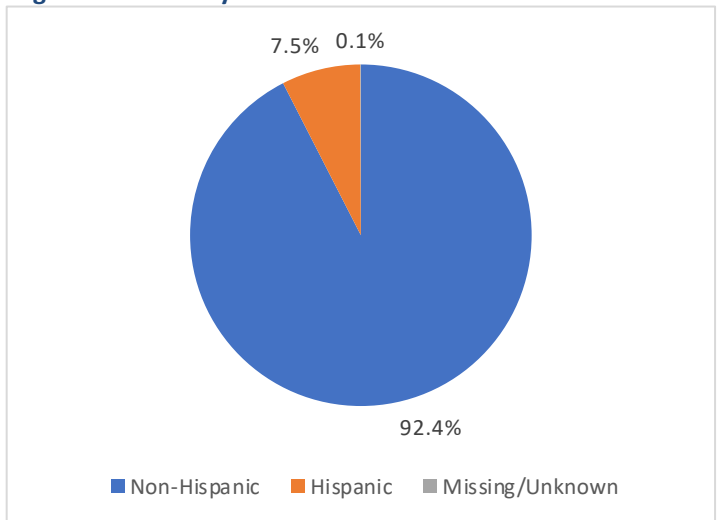
**Figure 16: Age Groups**



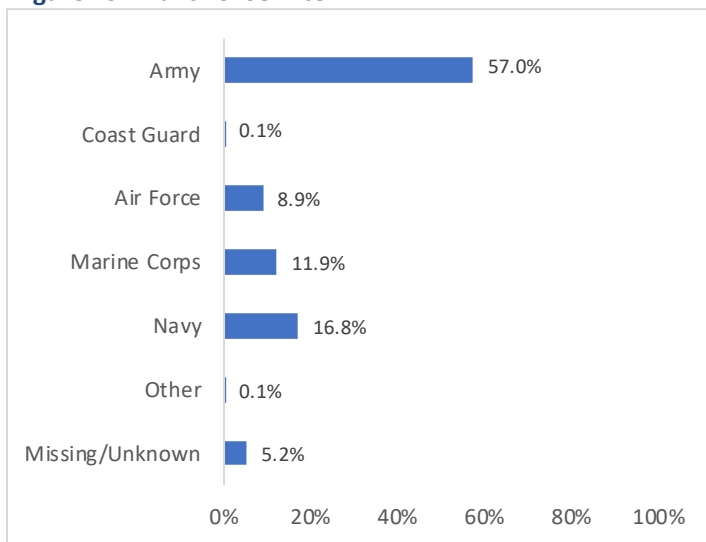
**Figure 17: Race**



**Figure 18: Ethnicity**



**Figure 19: Branch of Service**



- **Deployed Gulf War Veterans:** Veterans who served in the 1990-1991 Gulf War (Operations Desert Storm and Desert Shield) and used VHA health care services between January 1, 2010 – December 31, 2019.
- Age was calculated as of January 1, 2019.
- ‘Other’ race category includes Asian, Native Hawaiian/Pacific Islander, and Asian or Pacific Islander unspecified.
- ‘Other’ branch of service category includes Public Health Service, and National Oceanic and Atmospheric Administration Commissioned Officer (NOACC).
- VHA’s Corporate Data Warehouse (CDW) inpatient, outpatient, and purchased care VHA health care services data was extracted on August 14, 2020.
- Demographics and military characteristic variables were extracted from the United States Veterans Eligibility Trends and Statistics (USVETS) data.

**Table F: Prevalence and incidence rates among deployed Gulf War Veterans using VHA health care for selected diseases between January 1, 2010 and December 31, 2019**

Deployed Gulf War Veterans <sup>a</sup> VHA Users N = 362,843	Prevalence Rate per 100,000 Veterans	Age Adjusted Incidence Rate per 100,000 Veterans				
	2010-2019	2015	2016	2017	2018	2019
<b>Infectious and Parasitic Diseases</b>						
HIV	437	11	12	10	8	10
Hepatitis	1,541	73	70	62	55	49
<b>Malignant Neoplasms</b>						
Brain Cancer	91	5	7	6	6	7
Lung and Bronchus Cancer	345	39	26	55	27	33
Bladder Cancer	194	33	13	12	18	28
Prostate Cancer	1,703	163	161	138	150	151
Kidney and Renal Pelvis Cancer	272	18	15	17	17	25
Non-Hodgkin Lymphoma	312	24	16	16	18	15
<b>Endocrine/Metabolic Disorders</b>						
Diabetes	18,528	1,089	1,144	1,153	1,175	1,231
<b>Mental Disorders</b>						
PTSD	26,833	1,549	1,493	1,421	1,452	1,532
Major Depressive Disorder	28,699	1,826	1,588	1,519	1,561	1,610
Anxiety Disorder	17,183	1,101	963	984	1,022	1,145
Substance Abuse Disorder	17,503	1,034	521	531	546	560
<b>Diseases of Nervous System</b>						
Parkinson's Disease	282	23	45	58	69	42
ALS	81	4	5	6	6	5
Migraine	5,884	286	303	284	321	333
Multiple Sclerosis	329	11	9	10	7	9
<b>Diseases of Circulatory System</b>						
Hypertension	40,342	2,796	2,800	2,706	2,912	2,934
Coronary Artery Disease	6,045	531	444	501	472	453
Ischemic Heart Disease	1,022	47	217	165	171	130
<b>Diseases of Respiratory System</b>						
COPD	5,214	415	406	418	405	421
Asthma	4,802	249	215	216	227	220
Other Chronic Bronchitis	12	1	0	-	1	<1
<b>Diseases of Digestive System</b>						
Irritable Bowel Syndrome	2,899	155	173	188	188	192
Gastritis	1,137	69	72	63	82	73
Cirrhosis	814	50	71	52	61	67
<b>Musculoskeletal Diseases</b>						
Arthritis	18,033	1,316	1,044	936	1,050	1,046
Fibromyalgia	3,034	164	117	111	120	111
<b>Symptoms, Signs, and Ill-defined Conditions</b>						
Chronic Fatigue Syndrome	768	30	72	48	61	62
Sleep Apnea	21,420	1,254	2,273	2,082	2,160	2,106
<b>Injury/Poisonings</b>						
Traumatic Brain Injury	2,807	188	172	166	187	171

Abbreviations: HIV = Human Immunodeficiency Virus, PTSD = Posttraumatic Stress Disorder, ALS = Amyotrophic Lateral Sclerosis, COPD = Chronic Obstructive Pulmonary Disease.

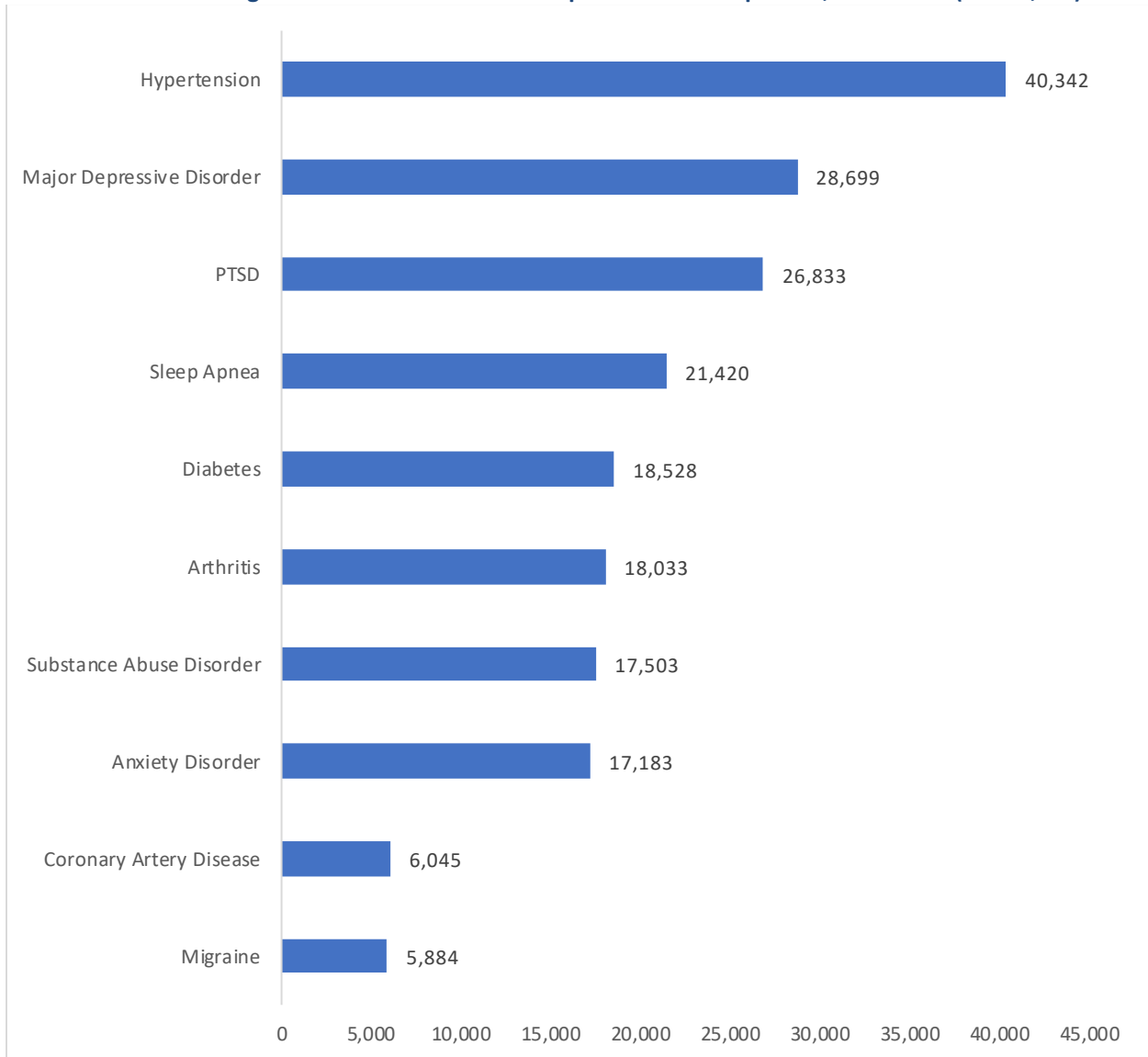
<sup>†</sup>VHA's Corporate Data Warehouse (CDW) inpatient, outpatient, and purchased care VHA health care services data was extracted on August 14, 2020.

\*Date of birth data for age-adjusted rates were extracted from the United States Veterans Eligibility Trends and Statistics (USVETS) data.

<sup>‡</sup>Deployed Gulf War Veterans: Veterans who served in the 1990-1991 Gulf War (Operations Desert Storm and Desert Shield) and used VHA health care services between January 1, 2010 – December 31, 2019.

Some of the observed changes in age-adjusted incidence rates from 2015 to 2016 may be attributed to the conversion from International Classification of Disease, Ninth Revision, Clinical Modification (ICD-9-CM) to the Tenth Revision, Clinical Modification ICD-10-CM.

**Figure 20: The ten most prevalent conditions between January 1, 2010 and December 31, 2019 among deployed Gulf War Veterans using VHA health care illustrated as prevalence rates per 100,00 Veterans (N=286,242)**



Assessment of the top ten conditions is among the 31 conditions included in this report.

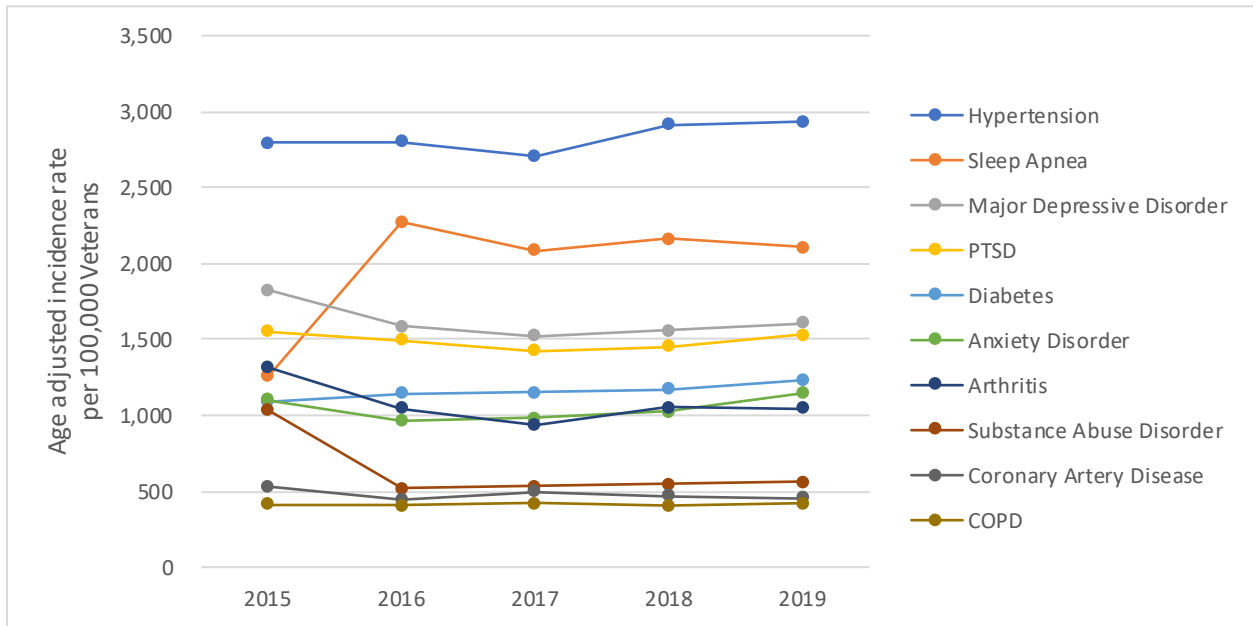
Abbreviations: PTSD = Posttraumatic Stress Disorder.

VHA's Corporate Data Warehouse (CDW) inpatient, outpatient, and purchased care VHA health care services data was extracted on August 14, 2020.

**Deployed Gulf War Veterans:** Veterans who served in the 1990-1991 Gulf War (Operations Desert Storm and Desert Shield) and used VHA health care services between January 1, 2010 – December 31, 2019.



**Figure 21: The ten conditions with the highest incidence rates in 2019 among deployed Gulf War Veterans using VHA health care compared to the four years prior (2015-2018) illustrated as age adjusted incidence rates per 100,000 Veterans**



Assessment of the top ten conditions is limited to the 31 conditions included in this report.

Abbreviations: PTSD = Posttraumatic Stress Disorder.

VHA's Corporate Data Warehouse (CDW) inpatient, outpatient, and purchased care VHA health care services data was extracted on August 14, 2020.

Date of birth data for age-adjusted rates were extracted from the United States Veterans Eligibility Trends and Statistics (USVETS) data.

**Deployed Gulf War Veterans:** Veterans who served in the 1990-1991 Gulf War (Operations Desert Storm and Desert Shield) and used VHA health care services between January 1, 2010 – December 31, 2019.

Legend is sorted in descending age-adjusted incidence rates order for the year 2019.

Some of the observed changes in age-adjusted incidence rates from 2015 to 2016 may be attributed to the conversion from International Classification of Disease, Ninth Revision, Clinical Modification (ICD-9-CM) to the Tenth Revision, Clinical Modification ICD-10-CM.

### **Main Findings – among Gulf War Veterans who use VHA health care services:**

- 1990-91 deployed Gulf War Veterans using VHA were 91.3% male and 8.7% female
- More than half of these Veterans were between 50-59 years of age as of 1 January 2019
- 63.7% of deployed 1990-91 Gulf War Veterans were White and 30.7% were Black/African American

#### **Cancers:**

- Brain cancer point prevalence rate was 91 cases per 100,000 1990-91 deployed Gulf War Veterans, lung and bronchus cancer was 345 cases per 100,000, and prostate cancer cases 1,703 per 100,000 Veterans.

#### **Heart Disease:**

- The hypertension point prevalence rate was 40,342 per 100,000 deployed Gulf War Veterans, coronary artery disease was observed in 6,045 cases per 100,000 Veterans and ischemic heart disease 1,022 cases per 100,000.

#### **Mental Disorders:**

- PTSD was identified in 26,833 per 100,000 deployed Gulf War Veterans and depression diagnoses was observed in 28,699 per 100,000 deployed Gulf War Veterans.

#### **Neurological Outcomes**

- Parkinson's disease prevalence rate was 282 cases per 100,000 deployed Gulf War Veterans and migraine prevalence rate was 5,884 per 100,000.

#### **Musculoskeletal disease**

- Arthritis prevalence was 18,033 per 100,000 deployed Gulf War Veterans and fibromyalgia in 3,034 per 100,000 deployed Gulf War Veterans.

**Table G: Demographic and military characteristics among deployed Operation Enduring Freedom, Iraqi Freedom, and New Dawn (OEF/OIF/OND) Veterans using VHA health care between January 1, 2019 and December 31, 2019**

	All VHA Users <sup>a</sup>		Deployed OEF/OIF/OND Veterans <sup>b</sup>	
	n	%	n	%
<b>All</b>	6,836,159	100.00	1,060,178	100.00
<b>Gender</b>				
Male	5,886,675	86.11	890,784	84.02
Female	589,243	8.62	145,972	13.77
Unknown	27	<0.01	-	<0.01
Missing	360,214	5.27	23,415	2.21
<b>Age<sup>c</sup></b>				
18-29	259,947	3.80	128,995	12.17
30-39	679,647	9.94	466,226	43.98
40-49	656,905	9.61	248,059	23.40
50-59	959,808	14.04	153,690	14.50
60-69	1,469,177	21.49	35,685	3.37
70-79	1,619,499	23.69	4,092	0.39
80+	830,766	12.15	=	<0.01
Missing	360,410	5.27	23,423	2.21
<b>Race</b>				
White	5,034,395	73.64	749,721	70.72
Black/African American	1,165,817	17.05	208,931	19.71
American Indian/Alaskan Native	57,174	0.84	14,532	1.37
Asian	68,901	1.01	29,547	2.79
Native Hawaiian/Pacific Islander	12,053	0.18	6,079	0.57
Asian or Pacific Islander Unspecified	27,000	0.39	7,044	0.66
Other	98,035	1.43	15,032	1.42
Multiple race	6,212	0.09	5,608	0.53
Unknown	6,358	0.09	269	0.03
Missing	360,214	5.27	23,415	2.21
<b>Ethnicity</b>				
Non-Hispanic	5,951,154	87.05	899,962	84.89
Hispanic	504,471	7.38	136,336	12.86
Unknown	20,320	0.30	465	0.04
Missing	360,214	5.27	23,415	2.21
<b>Branch of Service</b>				
Army	2,940,531	43.01	562,921	53.10
Coast Guard	52,298	0.77	1,432	0.14
Air Force	872,794	12.77	144,736	13.65
Marine Corps	587,084	8.59	138,634	13.08
Navy	1,078,022	15.77	151,585	14.30
Other <sup>d</sup>	3,470	0.05	306	0.03
Unknown	941,746	13.78	37,149	3.50
Missing	360,214	5.27	23,415	2.21

<sup>†</sup>VHA's Corporate Data Warehouse (CDW) inpatient, outpatient, and purchased care VHA health care services data was extracted on August 14, 2020.

\*Demographics and military characteristic variables were extracted from the United States Veterans Eligibility Trends and Statistics (USVETS) data.

<sup>a</sup>All VHA Users: All Veterans who used VHA health care services between January 1, 2019 – December 31, 2019.

<sup>b</sup>Deployed OEF/OIF/OND Veterans: Veterans who served during Operation Enduring Freedom, Iraqi Freedom, and New Dawn and used VHA health care services between January 1, 2019 – December 31, 2019.

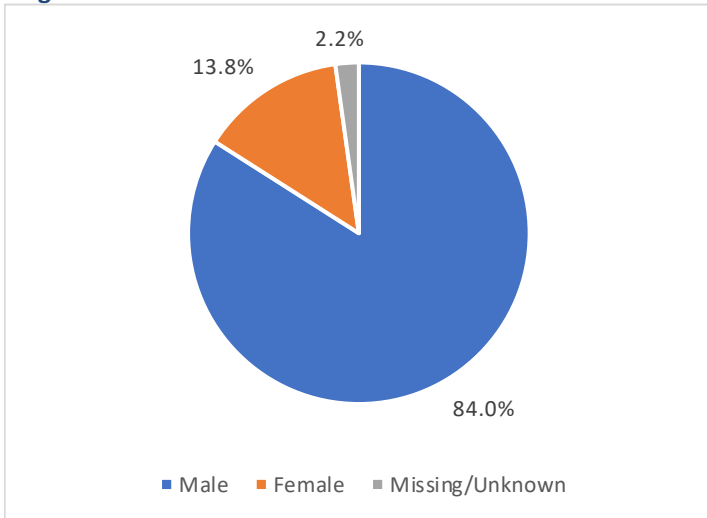
<sup>c</sup>Age was calculated as of January 1, 2019.

<sup>d</sup>Other includes Public Health Service, and National Oceanic and Atmospheric Administration Commissioned Officer (NOACC).

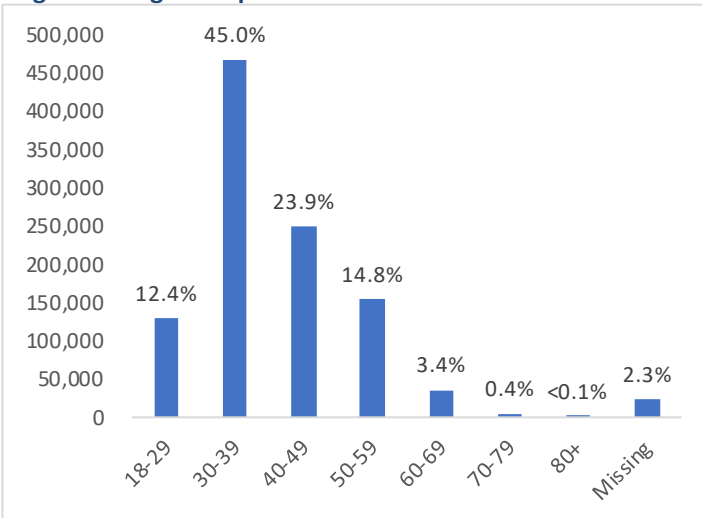
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**Figures - Demographic and military characteristics among deployed OEF/OIF/OND Veterans using VHA health care in 2019 (N=1,060,178)**

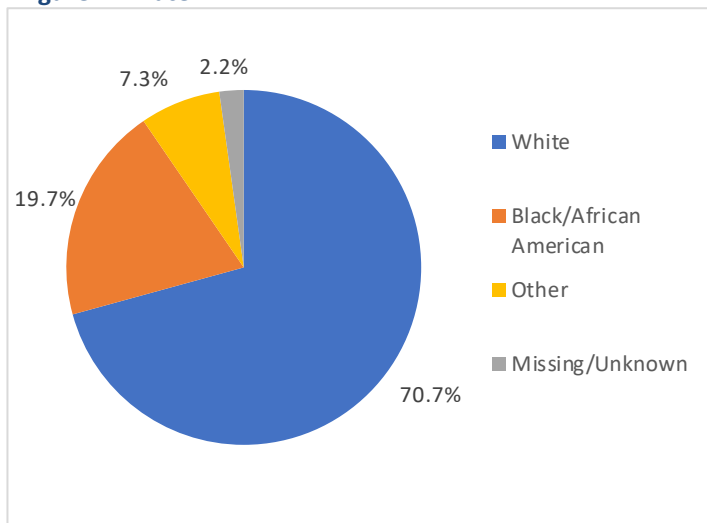
**Figure 22: Gender**



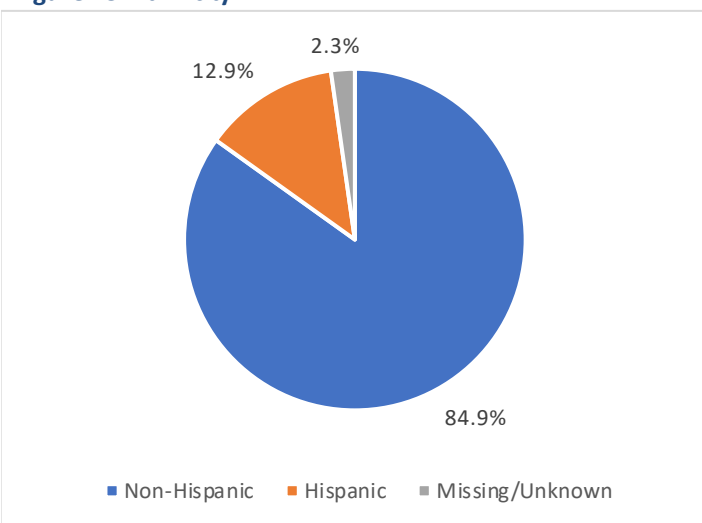
**Figure 23: Age Groups**



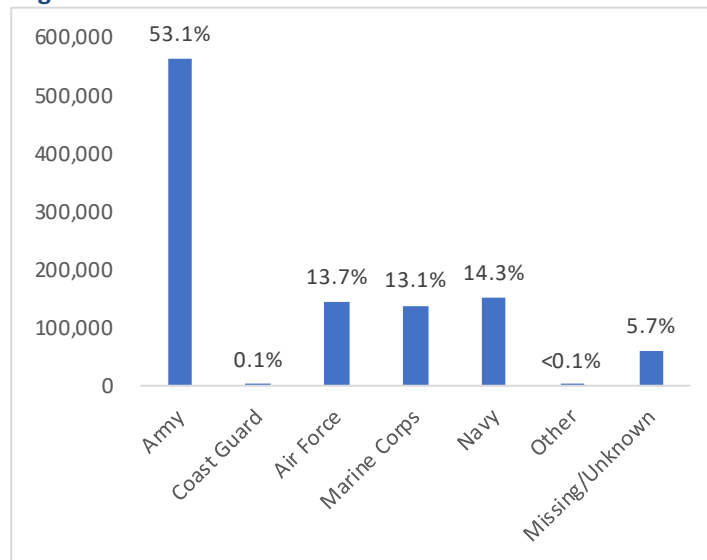
**Figure 24: Race**



**Figure 25: Ethnicity**



**Figure 26: Branch of Service**



- **Deployed OEF/OIF/OND Veterans:** Veterans who served during Operation Enduring Freedom, Iraqi Freedom, and New Dawn and used VHA health care services between January 1, 2010 – December 31, 2019.
- Age was calculated as of January 1, 2019.
- ‘Other’ race category includes Asian, Native Hawaiian/Pacific Islander, and Asian or Pacific Islander unspecified.
- ‘Other’ branch of service category includes Public Health Service, and National Oceanic and Atmospheric Administration Commissioned Officer (NOACC).
- VHA’s Corporate Data Warehouse (CDW) inpatient, outpatient, and purchased care VHA health care services data was extracted on August 14, 2020.
- Demographics and military characteristic variables were extracted from the United States Veterans Eligibility Trends and Statistics (USVETS) data.

**Table H: Prevalence and incidence rates among deployed Operation Enduring Freedom, Iraqi Freedom, and New Dawn (OEF/OIF/OND) Veterans using VHA health care for selected diseases between January 1, 2010 and December 31, 2019**

Deployed OEF/OIF/OND VHA Users N =1,636,210	Prevalence Rate per 100,000 Veterans	Age Adjusted Incidence Rate per 100,000 Veterans				
	2010-2019	2015	2016	2017	2018	2019
<b>Infectious and Parasitic Diseases</b>						
HIV	166	13	16	16	15	14
Hepatitis	600	67	68	73	65	57
<b>Malignant Neoplasms</b>						
Brain Cancer	44	6	5	5	5	5
Lung and Bronchus Cancer	38	9	8	11	14	21
Bladder Cancer	28	10	5	11	7	8
Prostate Cancer	275	154	61	94	113	128
Kidney and Renal Pelvis Cancer	61	38	17	14	23	18
Non-Hodgkin Lymphoma	90	61	10	15	23	15
<b>Endocrine/Metabolic Disorders</b>						
Diabetes	4,426	822	822	801	1,141	897
<b>Mental Disorders</b>						
PTSD	29,254	3,701	4,010	3,169	3,186	3,128
Major Depressive Disorder	26,210	3,428	3,056	2,984	3,129	3,589
Anxiety Disorder	19,321	2,412	2,169	2,205	2,411	2,631
Substance Abuse Disorder	13,741	1,649	960	981	1,032	1,036
<b>Diseases of Nervous System</b>						
Parkinson's Disease	47	27	26	45	28	21
ALS	18	2	4	7	3	4
Migraine	7,240	791	1,432	801	911	904
Multiple Sclerosis	153	16	13	13	14	13
<b>Diseases of Circulatory System</b>						
Hypertension	13,956	2,474	2,320	2,235	3,327	2,422
Coronary Artery Disease	953	294	291	269	599	252
Ischemic Heart Disease	158	19	112	85	64	343
<b>Diseases of Respiratory System</b>						
COPD	1,058	220	221	574	196	218
Asthma	3,255	397	365	341	392	365
Other Chronic Bronchitis	5	2	<1	<1	<1	<1
<b>Diseases of Digestive System</b>						
Irritable Bowel Syndrome	1,674	161	186	206	240	247
Gastritis	621	83	97	81	98	89
Cirrhosis	155	37	30	31	45	46
<b>Musculoskeletal Diseases</b>						
Arthritis	6,065	2,097	984	907	971	961
Fibromyalgia	1,210	157	72	73	85	79
<b>Symptoms, Signs, and Ill-defined Conditions</b>						
Chronic Fatigue Syndrome	222	16	47	36	43	52
Sleep Apnea	13,608	2,465	3,708	2,768	2,940	3,180
<b>Injury/Poisonings</b>						
Traumatic Brain Injury	7,651	810	1,414	706	697	642

Abbreviations: HIV = Human Immunodeficiency Virus, PTSD = Posttraumatic Stress Disorder, ALS = Amyotrophic Lateral Sclerosis, COPD = Chronic Obstructive Pulmonary Disease.

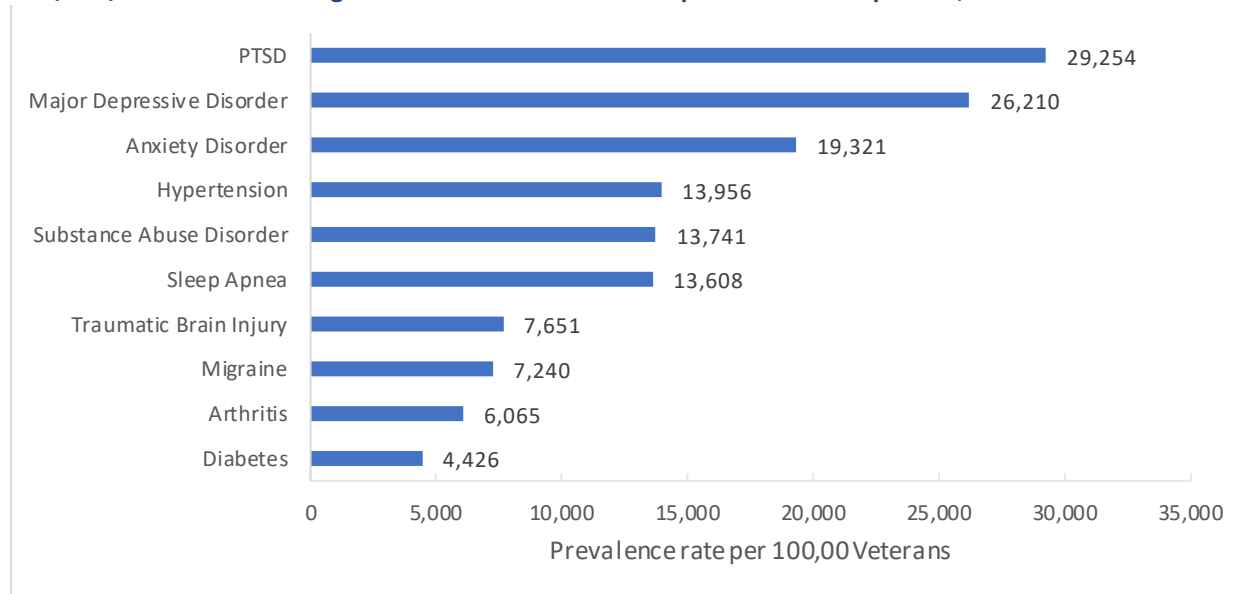
† VHA's Corporate Data Warehouse (CDW) inpatient, outpatient, and purchased care VHA health care services data was extracted on August 14, 2020.

\*Date of birth data for age-adjusted rates were extracted from the United States Veterans Eligibility Trends and Statistics (USVETS) data.

‡Deployed OEF/OIF/OND Veterans: Veterans who served during Operation Enduring Freedom, Iraqi Freedom, and New Dawn and used VHA health care services between January 1, 2010 – December 31, 2019.

Some of the observed changes in age-adjusted incidence rates from 2015 to 2016 may be attributed to the conversion from International Classification of Disease, Ninth Revision, Clinical Modification (ICD-9-CM) to the Tenth Revision, Clinical Modification ICD-10-CM.

**Figure 27: The ten most prevalent conditions between January 1, 2010 and December 31, 2019 among deployed OEF/OIF/OND Veterans using VHA health care illustrated as prevalence rates per 100,00 Veterans**



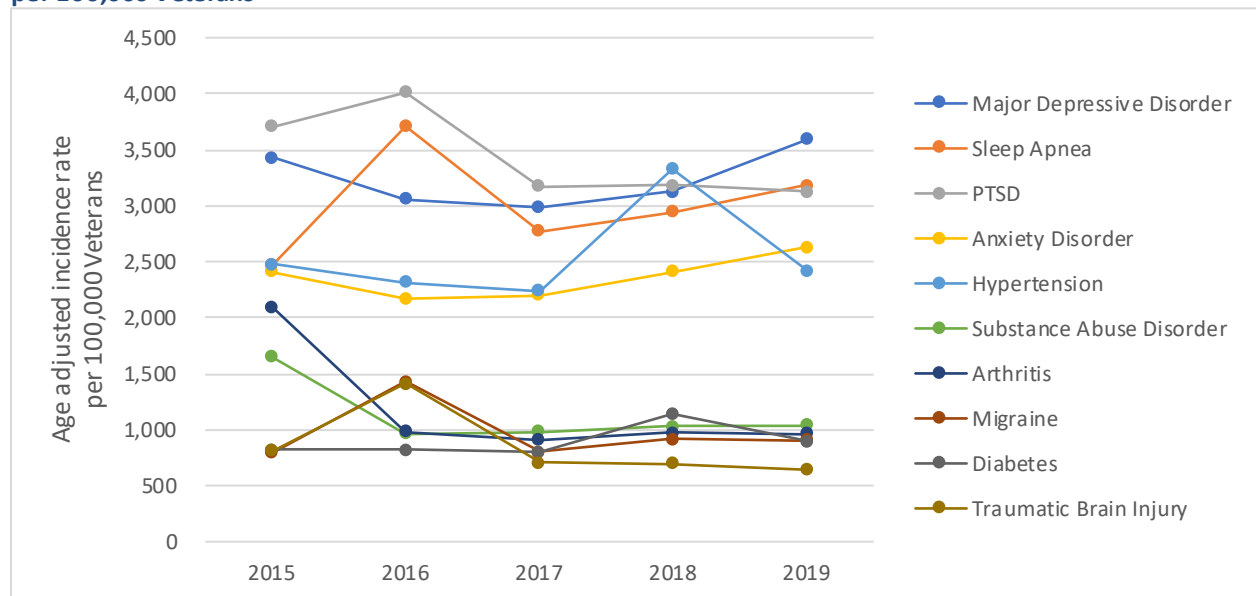
Assessment of the top ten conditions is limited to the 31 conditions included in this report.

Abbreviations: PTSD = Posttraumatic Stress Disorder, COPD = Chronic Obstructive Pulmonary Disease.

VHA's Corporate Data Warehouse (CDW) inpatient, outpatient, and purchased care VHA health care services data was extracted on August 14, 2020.

**Deployed OEF/OIF/OND Veterans:** Veterans who served during Operation Enduring Freedom, Iraqi Freedom, and Operation New Dawn and used VHA health care services between January 1, 2010– December 31, 2019.

**Figure 28: The ten conditions with the highest incidence rates in 2019 among deployed OEF/OIF/OND Veterans using VHA health care compared to the four years prior (2015-2018) illustrated as age adjusted incidence rates per 100,000 Veterans**



Assessment of the top ten conditions is among the 31 conditions included in this report.

Abbreviations: PTSD = Posttraumatic Stress Disorder.

VHA's Corporate Data Warehouse (CDW) inpatient, outpatient, and purchased care VHA health care services data was extracted on August 14, 2020.

Date of birth data for age-adjusted rates were extracted from the United States Veterans Eligibility Trends and Statistics (USVETS) data.

**Deployed OEF/OIF/OND Veterans:** Veterans who served during Operation Enduring Freedom/Operation Iraqi Freedom/ Operation New Dawn and used VHA health care services between January 1, 2010 – December 31, 2019.

Legend is sorted in descending age-adjusted incidence rates order for the year 2019

Some of the observed changes in age-adjusted incidence rates from 2015 to 2016 may be attributed to the conversion from International Classification of Disease, Ninth Revision, Clinical Modification (ICD-9-CM) to the Tenth Revision, Clinical Modification ICD-10-CM

## Main Findings – among OEF/OIF/OND Veterans

- OEF/OIF/OND deployed Veterans were 84.0% male and 13.6% female.
- Close to half of the Veterans (45.0%) were between ages 30-39 at the end of 2019.
- Most of the deployed OEF/OIF/OND Veterans were white (70.7%) and 19.7% were black/African American.
- Among the OEF/OIF/OND Veterans 84.9% were non-Hispanic while 12.9% were Hispanic.
- Over half (53.1%) of the Veterans served in the Army.

The prevalence rates among deployed OEF/OIF/OND Veterans are lower compared to other study groups.

### Cancers:

- Brain cancer rates were 44, prostate cancer rates 275 and lung and bronchus cancers 38 per 100,000 Veterans among OEF/OIF/OND Veterans.

### Heart Diseases:

- Among deployed OEF/OIF/OND Veterans the prevalence rate for hypertension was close to 14,000 per 100,000 Veterans, while the prevalence rate for coronary artery disease was 953 per 100,000 Veterans.

### Mental Disorders:

- PTSD was the most prevalent condition among deployed OEF/OIF/OND Veterans (29,254) per 100,000 Veterans.
- PTSD was followed by major depressive disorder (26,210) and anxiety disorder (19,321) per 100,000 Veterans.

### Neurological Outcomes:

- The prevalence rate for Parkinson's disease was only 47 per 100,000 Veterans.
- Migraines affected 7,240 per 100,000 Veterans among deployed OEF/OIF/OND Veterans.

**Sleep Apnea:** Sleep apnea affected 13,608 per 100,000 Veterans among deployed OEF/OIF/OND Veterans.

**Infectious Diseases:** The 10-year prevalence rate for hepatitis was 600 per 100,000 Veterans among OEF/OIF/OND Veterans.

**Traumatic Brain Injury:** Traumatic brain injury affected 7,651 per 100,000 deployed OEF/OIF/OND Veterans.

The annual age-adjusted incidence rates from 2015 through 2019 have small variations from year to year across most conditions among OEF/OIF/OND Veterans.

## Appendix A: Case Definitions of Specified Disease/Condition

Condition	ICD-9-CM codes	ICD-10-CM codes
<b>Human Immunodeficiency Virus (HIV)</b>	042	B20
<b>Hepatitis</b>	070, 571.1, 571.4	B15, B16, B17, B18, B19, K70.10, K73.0, K73.2, K73.8, K73.9, K75.4
<b>Brain Cancer</b>	191	C71
<b>Lung and Bronchus Cancer</b>	162.2, 162.3, 162.4, 162.5, 162.6, 162.7, 162.8, 162.9	C34
<b>Bladder Cancer</b>	188	C67
<b>Prostate Cancer</b>	185	C61
<b>Kidney and Renal Pelvis Cancer</b>	189.0, 189.1	C64, C65
<b>Non-Hodgkin Lymphoma</b>	200, 202, 204	C82, C83, C84, C85
<b>Diabetes</b>	249, 250	E08-E13
<b>Posttraumatic Stress Disorder (PTSD)</b>	309.81	F43.1
<b>Major Depression</b>	296.2, 296.3, 311	F32, F33
<b>Anxiety Disorder</b>	300.0, 300.2, 300.3	F40, F41, F42
<b>Substance Abuse Disorder</b>	304, 305.1-305.9	F11, F12, F13, F14, F15, F16, F17, F18, F19
<b>Parkinson's disease</b>	332	G20, G21
<b>Amyotrophic Lateral Sclerosis (ALS)</b>	335.2	G12.21
<b>Migraine</b>	346	G43
<b>Multiple Sclerosis</b>	340	G35
<b>Hypertension</b>	401	I10
<b>Coronary Artery Disease</b>	410.00-410.02, 410.20-410.22, 410.30-410.32, 410.40-410.43, 410.50-410.53, 410.60-410.62, 410.70-410.72, 410.80-410.82, 410.90-410.92, 411.0, 411.1, 411.81, 411.89, 412, 413.0, 413.1, 413.9, 414.00-414.07, 414.2, 414.3, 414.8, 414.9, V45.81, V45.82	I20.0, I20.1, I20.8, I20.9, I21.09, I21.11, I21.19, I21.20, I21.21, I21.29, I21.3, I21.4, I21.9, I21.A1, I21.A9, I24.0, I24.1, I24.8, I25.10, I25.2, I25.5, I25.810, I25.811, I25.812, I25.82, I25.83, I25.89, I25.9, Z95.1, Z98.61
<b>Ischemic Heart Disease</b>	410-414, Excluding CAD	I20-I25, Excluding CAD
<b>Chronic Obstructive Pulmonary Disease (COPD)</b>	490-491.7, 491.9, 492, 494-496	J40, J41.0, J41.1, J42, J43.9, J44.0, J44.1, J44.9, J47.1, J47.9, J67.0-J67.9
<b>Asthma</b>	493	J45
<b>Other Chronic Bronchitis</b>	491.8	J41.8
<b>Irritable Bowel Syndrome</b>	564.1	K58
<b>Gastritis</b>	535.0, 535.1, 535.2, 535.3, 535.4, 535.5	K29.0, K29.2, K29.3, K29.4, K29.5, K29.6, K29.7
<b>Cirrhosis</b>	571.2, 571.5, 571.6	K70.30, K74.0, K74.3, K74.4, K74.5, K74.60, K74.69
<b>Arthritis</b>	715, 714.0, 714.1, 714.2, 714.3	M15, M16, M17, M18, M19,
<b>Fibromyalgia</b>	729.1	M79.7
<b>Chronic Fatigue Syndrome</b>	780.71	R53.82
<b>Sleep Apnea</b>	327.23	G47.33
<b>Traumatic Brain Injury</b>	310.2, 800, 801, 803, 804, 850-854, 905.0, 907.0, 950, 959.01, V15.52	F07.81, S02, S04, S06, S09, Z87.820